



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/693,602	10/24/2003	Charlene W. Bayer	163.1773USU1	6490
23552	7590	01/09/2006	EXAMINER	
MERCHANT & GOULD PC P.O. BOX 2903 MINNEAPOLIS, MN 55402-0903			DRODGE, JOSEPH W	
			ART UNIT	PAPER NUMBER
			1723	

DATE MAILED: 01/09/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	Application No. 10/693,602	Applicant(s) BAYER ET AL.	
	Examiner Joseph W. Drodge	Art Unit 1723	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-32 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-32 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)  | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>0105</u> . | 6) <input type="checkbox"/> Other: ____.  |

Art Unit: 1723

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1,5-7,11-16,18-20,22 and 23 are rejected under 35 U.S.C. 102(b) as being anticipated by Gesser patent 4,892,719. Gesser discloses an absorptive filtering system comprising a polymeric matrix in itself (column 2, lines 33-34) or comprise a fibrous or foam substrate [as in claims 18-20 and 22] for a polymeric filtering coating (column 2, lines 19-22), Gesser being silent as to any cross-linking in either instance, hence it is presumed that the polymers employed are free of cross-linking as claimed.

Also disclosed are reactive additives to coat the polymeric coating or polymeric substrate that may employ acidic carboxylic acid groups and basic sulfonic acid and/or amine groups [as in claims 5-7, 11,13,14] and non-reactive additives including glycerol [see column 2, lines 65-67 and requirements of instant claims 15 and 16]. The adsorptive filter is used to remove volatile contaminants such as formaldehyde and acid gases from a gaseous fluid stream per column 1, line 65-column 2, line 6 and column 2, lines 22-25, [as required by instant claims 22 and 23]. There may be layers of filter and reactive additives, per column 2, lines 4-6 [as in claim 12] and a housing for the filter per column 2, lines 26-30 [instant claim 22].

Claims 1,5,6,11,13-16 are rejected under 35 U.S.C. 102(b) as being anticipated by Kojima et al patent 3,627,703. Kojima et al disclose an ion exchange type membrane filter that selectively absorbs or adsorbs selected ions which comprises a

Art Unit: 1723

polymer matrix (column 3, lines 30-32), substantially free of cross-linking (column 2, lines 52-54) and reactive additives, also of the cation-exchange and anion-exchange type (column 3, lines 30-44).

With respect to dependent claims: also disclosed are specifically polyethylene/polypropylene and styrene-butadiene copolymers (column 3, lines 1-2 and column 3, lines 38-41, respectively) per claims 3 and 4, acid, base and stoichiometric amounts of additives (column 3, lines 40-42 and column 4, lines 1-8 and 74-75) per claims 5 and 6 dispersed or separated throughout the filter (column 3 lines 43-44) per claims 5,6 and 11, species which are acid/base reaction products from additives (column 4, lines 1-16 ) per claims 13-14) and non-reactive additives or fillers (column 3, lines 664-66) per claim 15. For claim 16, wetting with aqueous solution at column 4 , lines 25-29 constitutes a water additive.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 2 and 3 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kojima et al in view of Takashima et al patent 5,627,329. Claims 2 and 3 differ in requiring the polymer matrix having a particular diffusivity and glass transition temperature. Takashima et al teach similar polymers to Kojima in an ion exchange membrane having high degrees of flux, hence diffusivity. It would have been obvious to have considered the polymers disclosed by Kojima et al to have the claimed diffusivity, as taught by Takashima et al, since Takashima et al teach that such polymers have widely varying and large porosities or flux. Kojima is considered to disclose the claimed glass transition temperatures, since several of the specific copolymers of instant claim 3 are present.

Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kojima et al in view of Takashima et al as applied to claim 3 above, and further in view of Oda et al patent 4,666,574. Claim 4 further differs in requiring polyacrylamide, a polymeric additive to an ion exchange filter membrane taught by Oda at column 4, lines 8-15. It

Art Unit: 1723

would have been obvious to have utilized the polyacrylamide of Oda in order to control the viscosity of the resin in the matrix.

Claims 7-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kojima et al in view of Takashima et al patent 3,876,565. Although Kojima disclose carboxylic and sulfonic additives to the membrane filter, claims 7-10 differ in requiring theses to be in the form of carboxylic acid. Takashima et al teach carboxylic acid added to an ion exchange membrane at column 4, lines 38-39. It would have been obvious to have utilized carboxylic acid of Takashima in the Kojima membrane, in order to utilize its binding properties in the formation of the resin matrix of the membrane filter. With regard to claims 8 and 9, water additive is also suggested by Kojima at column 4, lines 25-29 in the discussion of "wetting " the membrane with aqueous solution . For claim 10, particles of very small size are suggested by Takashima at column 4, lines 44-48 .

Claims 12,17-21,24 and 27-29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kojima et al in view of Oda et al patent 4,666,574.

Claim 12 differs in requiring layers, a feature of ion exchange membrane taught by Oda at column 5, lines 46-54. It would have been obvious to have manufactured the ion exchange membrane of Kojima in layers, as taught by Oda, to selectively remove both selective cation and anion materials from fluids passing through the Kojima apparatus.

Claim 17 differs in requiring polyacrylamide, a polymeric additive to an ion exchange filter membrane taught by Oda at column 4, lines 8-15. It would have been

Art Unit: 1723

obvious to have utilized the polyacrylamide of Oda in order to have controlled the viscosity of the resin matrix.

Claims 18-21, 24 and 27-29 further differ in requiring the ion exchange adsorptive membrane filter to be anchored to a substrate, a feature shown by Oda at column 5, lines 60-64. It would have been further obvious to have employed substrates, as in Oda, to give the membrane more support and make it stronger. Specific substrate materials such as fibrous material or screens are listed by Oda at column 5, lines 60-65.

Claims 23 and 32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kojima et al in view of Kimura et al patent 4,318,714. Claims 23 and 32 differ in requiring use of the filter to remove volatiles or non-volatiles from a fluid or gas stream, such being taught by Kimura at column 2, lines 28-29 and column 4, lines 30-44, in an ion exchange membrane filter of similar materials and properties (high swelling capacity) to Kojima. Thus, it would have been obvious to have employed the ion exchange adsorbing structure of Kojima to remove volatile or non-volatile materials from a gas fluid stream, as taught by Kimura, since it is shown that use of ion exchange membrane is effective for removing such impurities from a gas or fluid stream.

Claims 22, 25 and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kojima et al in view of Oda et al as applied to claim 24 above, and further in view of Takashima et al.

Claim 22 differs in requiring a housing, such being inherent in the end use of ion exchange membrane filter of Takashima for removing impurities from a nuclear fluid

Art Unit: 1723

environment at column 6, lines 11-21. It would have been obvious to have utilized the housing of Takashima when employing the filter of Kojima for removing impurities from an industrial stream, as taught by Takashima, in order to contain both fluid stream, and collected impurities.

Although Kojima disclose carboxylic and sulfonic additives to the membrane filter, claims 25 and 26 further differ in requiring theses to be in the form of carboxylic acid. Takashima et al teach carboxylic acid added to an ion exchange membrane at column , lines . It would have been obvious to have utilized carboxylic acid of Takashima in the Kojima membrane, in order to have utilized it's binding properties in the formation of the resin matrix. With regard to claims 8 and 9, water additive is also suggested by Kojima at column 4, lines 20-29 in the discussion of "wetting " the membrane with aqueous solution .

Claims 30 and 31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kojima et al in view of Oda et al as applied to claim 24 above, and further in view of Kimura et al patent 4,318,714. Claims 30 and 31 further differ in requiring use of the filter to remove volatiles or non-volatiles from a fluid or gas stream, such being taught by Kimura at column 2, lines 28-29 and column 4, lines 30-44, in an ion exchange membrane filter of similar materials and properties (high swelling capacity) to Kojima. Thus, it would have been obvious to have employed the ion exchange adsorbing structure of Kojima to remove volatile or non-volatile materials from a gas fluid stream, as taught by Kimura, since it is shown that use of ion exchange membrane is effective for removing such impurities from a gas or fluid stream.




Any inquiry concerning this communication or earlier communications from the examiner should be directed to Joseph Drodge at telephone number 571-272-1140. The examiner can normally be reached on Monday-Friday from 8:30 AM to 5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wanda Walker, can be reached at 571-272-1151. The fax phone number for the examining group where this application is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either private PAIR or Public PAIR, and through Private PAIR only for unpublished applications. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have any questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

JWD

January 4, 2006

  
JOSEPH DRODGE  
PRIMARY EXAMINER